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BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to Roads and Drains Thirumenahalli And Surrounding Area in Ward no 5.
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)
Date of Testing	:	27-03-2019
Type of Mix	:	DBM
Sample ID	:	DBM-2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
I. Weight of Mixture before extraction, g	837	950
II. Weight of Mixture after extraction, g	800	914
III. Weight of Bitumen	37	36
IV. Weight of filter paper before extraction, g	2.00	2.00
V. Weight of filter paper after extraction, g	4.00	4.00
VI. Weight of fines, g	2.00	2.00
VII. Weight of Bitumen & fines	39.00	38.00
VIII. Bitumen content in %	4.66	4.00
IX. Average Bitumen content in %	4.33	
X. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	At site	**Date of Sampling:**	27-03-2019
		Date of testing:	27-03-2019
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	800

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	30.0	30.0	3.75	96.25	90-100
19.00	125.0	155.0	19.38	80.63	71-95
13.20	110.0	265.0	33.13	66.88	56-80
4.750	160.0	425.0	53.13	46.88	38-54
2.360	95.0	520.0	65.00	35.00	28-42
0.300	125.0	645.0	80.63	19.38	7-21
0.075	100.0	745.0	93.13	6.88	2-8
Pan	55.0				
Total	800.0				

Consultant's Representative

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Name of Work	:	Improvements to Roads and Drains Thirumenahalli And Surrounding Area in Ward no 5.
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)
Date of Testing	:	27-03-2019
Type of Mix	:	Tack coat
Sample ID	:	2

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.766	0.540
Final weight of plate after application of tack Coat (c)	Kg	0.789	0.563
Weight of tack coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256
Average	Kg/sq.m	0.256	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

Consultant's Representative

TEJUS CONSULTANTS

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Work	Improvements to Roads and Drains in Agrahara, Agrahara Layout And Surrounding Area in Ward no 5.
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	DBM	Date of Sampling	28-03-2019
Sample Location	At plant	Date of Testing	28-03-2019

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	394.00	378.00	384.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	296.00	281.00	288.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	98.00	97.00	96.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.87	25.66	25.00	
5	Average Aggregate impact value	(%)	25.18			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

Consultant's Representative

TEJUS CONSULTANTS

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Name of Work	:	Improvements to roads and drains in Agarahara, Agarahara Layout and Surrounding area in Ward No. 05
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)
Date of Testing	:	28-03-2019
Type of Mix	:	Tack coat
Sample ID	:	2

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.766	0.680
Final weight of plate after application of tack Coat (c)	Kg	0.789	0.703
Weight of tack coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256
Average	Kg/sq.m	0.256	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

Consultant's Representative

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BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to roads and drains in Agarahara, Agarahara Layout and Surrounding area in Ward No. 05
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)
Date of Testing	:	28-03-2019
Type of Mix	:	DBM
Sample ID	:	DBM-1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	834	947
2. Weight of Mixture after extraction, g	797	911
3. Weight of Bitumen	37	36
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	39.00	38.00
8. Bitumen content in %	4.68	4.01
9. Average Bitumen content in %	4.34	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	At site	**Date of Sampling:**	28-03-2019
		Date of testing:	28-03-2019
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	797

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	29.0	29.0	3.64	96.36	90-100
19.00	123.0	152.0	19.07	80.93	71-95
13.20	109.0	261.0	32.75	67.25	56-80
4.750	157.0	418.0	52.45	47.55	38-54
2.360	91.0	509.0	63.86	36.14	28-42
0.300	123.0	632.0	79.30	20.70	7-21
0.075	106.0	738.0	92.60	7.40	2-8
Pan	59.0				
Total	797.0				

Consultant's Representative

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Name of Work	:	Improvements to roads and drains in Agarahara, Agarahara Layout and Surrounding area in Ward No. 05
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)
Date of Testing	:	28-03-2019
Type of Mix	:	DBM
Sample ID	:	DBM-2

GRADATION FOR DBM

(As per MORT&H 500-10,Grading-2)

Sample Location:	At plant	**Date of Sampling:**	28-03-2019
		Date of testing:	28-03-2019
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	1500.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	85	85	5.67	94.33	90-100
19.00	120	205	13.67	86.33	71-95
13.20	225	430	28.67	71.33	56-80
4.750	350	780	52.00	48.00	38-54
2.360	190	970	64.67	35.33	28-42
0.300	280	1250	83.33	16.67	7-21
0.075	180	1430	95.33	4.67	2-8
Pan	70	1500			
Total	1500.0				

Consultant's Representative

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Name of Work	:	Improvements to roads and drains in Agarahara, Agarahara Layout and Surrounding area in Ward No. 05
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)
Date of Testing	:	28-03-2019
Type of Mix	:	DBM
Sample ID	:	DBM-1

GRADATION FOR DBM

(As per MORT&H 500-10,Grading-2)

Sample Location:	At plant	**Date of Sampling:**	28-03-2019
		Date of testing:	28-03-2019
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	1500.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	80	80	5.33	94.67	90-100
19.00	113	193	12.87	87.13	71-95
13.20	222	415	27.67	72.33	56-80
4.750	341	756	50.40	49.60	38-54
2.360	186	942	62.80	37.20	28-42
0.300	278	1220	81.33	18.67	7-21
0.075	176	1396	93.07	6.93	2-8
Pan	104	1500			
Total	1500.0				

Consultant's Representative

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Project	Improvements to Roads and Drains in Agrahara, Agrahara Layout And Surrounding Area in Ward no 5.
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	DBM		Proposed Use	DBM
Sample Location	At plant		Date of Sampling	28-03-2019
			Date of Testing	28-03-2019

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7800	670	7130	400
31.5	25.0	4250	510	3740	300
25.0	20.0	2400	30	2370	220
20.0	16.0	1500	300	1200	280
16.0	12.5	560	95	465	170
12.5	10.0	300	60	240	90
10.0	6.3	130	80	50	60
Total		**16940**	**1745**	**15195**	**1520**

Results

Flakiness Index(%):	10.30
Elongation Index(%):	10.00
Combined FI+EL (%)	20.30

Consultant's Representative

TEJUS CONSULTANTS

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Test Report on Compressive Strength of Concrete Cubes

Project:	Construction of Govt. School Rooms, Palanahalli and Kattigehalli Village in Ward No.05 (Palanahalli)
Client:	Bruhat Bangalore Mahanagar Palike
Consultant:	TEJUS CONSULTANTS
Contractor	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)
Location:	Cement
Grade of concrete:	M25
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	07-03-2019	28-03-2019	28 days	8.583	22500	568	25.24	25.20
2	07-03-2019	28-03-2019	28 days	8.662	22500	567	25.20	
3	07-03-2019	28-03-2019	28 days	8.563	22500	566	25.16	

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Project	Improvements to Roads and Drains in Agrahara, Agrahara Layout And Surrounding Area in Ward no 5.
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	DBM		**Proposed Use**	**DBM**
Sample Location	At plant		**Date of Sampling**	29-03-2019
			Date of Testing	29-03-2019

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7841	675	7166	381
31.5	25.0	4251	500	3751	290
25.0	20.0	2453	27	2426	220
20.0	16.0	1564	341	1223	280
16.0	12.5	564	96	468	170
12.5	10.0	283	60	223	120
10.0	6.3	122	80	42	70
Total		**17078**	**1779**	**15299**	**1531**

Results

Flakiness Index(%):	10.42
Elongation Index(%):	10.01
Combined FI+EL (%)	20.42

Consultant's Representative

TEJUS CONSULTANTS

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Name of Work	:	Improvements to roads and drains in Agarahara, Agarahara Layout and Surrounding area in Ward No. 05
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)
Date of Testing	:	29-03-2019
Type of Mix	:	DBM
Sample ID	:	DBM-3

GRADATION FOR DBM

(As per MORT&H 500-10,Grading-2)

Sample Location:	At plant	**Date of Sampling:**	29-03-2019
		Date of testing:	29-03-2019
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	1500.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	90	90	6.00	94.00	90-100
19.00	120	210	14.00	86.00	71-95
13.20	230	440	29.33	70.67	56-80
4.750	350	790	52.67	47.33	38-54
2.360	190	980	65.33	34.67	28-42
0.300	280	1260	84.00	16.00	7-21
0.075	175	1435	95.67	4.33	2-8
Pan	65	1500			
Total	1500.0				

Consultant's Representative

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BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to roads and drains in Agarahara, Agarahara Layout and Surrounding area in Ward No. 05
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)
Date of Testing	:	29-03-2019
Type of Mix	:	DBM
Sample ID	:	DBM-2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	840	950
2. Weight of Mixture after extraction, g	804	911
3. Weight of Bitumen	36	39
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	38.00	41.00
8. Bitumen content in %	4.52	4.32
9. Average Bitumen content in %	4.42	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	At site	**Date of Sampling:**	29-03-2019
		Date of testing:	29-03-2019
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	804

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	30.0	30.0	3.73	96.27	90-100
19.00	125.0	155.0	19.28	80.72	71-95
13.20	110.0	265.0	32.96	67.04	56-80
4.750	160.0	425.0	52.86	47.14	38-54
2.360	95.0	520.0	64.68	35.32	28-42
0.300	130.0	650.0	80.85	19.15	7-21
0.075	110.0	760.0	94.53	5.47	2-8
Pan	44.0				
Total	804.0				

Consultant's Representative

TEJUS CONSULTANTS

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Name of Work	:	Improvements to roads and drains in Agarahara, Agarahara Layout and Surrounding area in Ward No. 05
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	:	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)
Date of Testing	:	29-03-2019
Type of Mix	:	Tack coat
Sample ID	:	3

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.765	0.750
Final weight of plate after application of tack Coat (c)	Kg	0.788	0.773
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.256
Average	Kg/sq.m	0.256	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

Consultant's Representative

TEJUS CONSULTANTS

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Project	Improvements to Roads and Drains in Agrahara, Agrahara Layout And Surrounding Area in Ward no 5.
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	DBM	Date of Sampling	29-03-2019
Sample location	At plant	Date of Testing	29-03-2019

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	395.00	380.00	380.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	297.00	282.00	284.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	98.00	98.00	96.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.81	25.79	25.26	
5	Average Aggregate impact value	(%)	25.29			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

Consultant's Representative

TEJUS CONSULTANTS

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Test Report on Compressive Strength of Concrete Cubes

Project:	Construction of Govt. School Rooms, Palanahalli and Kattigehalli Village in Ward No.05 (Palanahalli)
Client:	Bruhat Bangalore Mahanagar Palike
Consultant:	TEJUS CONSULTANTS
Contractor:	Sri.T K SHANKARAPPA (MESPC INFRA PROJECTS PRIVATE LIMITED)
Location:	Cement
Grade of concrete:	M25
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	25-03-2019	01-04-2019	7 days	8.832	22500	367	16.31	16.21
2	25-03-2019	01-04-2019	7 days	8.864	22500	364	16.18	
3	25-03-2019	01-04-2019	7 days	8.721	22500	363	16.13	

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